PRELIMINARY TECHNOLOGY ASSESSMENT

Wood-Pellet-Fired Biomass Boiler

What is this Technology?

Biomass boilers use agricultural, forest, urban, and industrial residues and waste to generate heat. Advances in biomass boilers have delivered efficiencies of 90% or better, comparable to state-of-the art gas-fired condensing boilers. This form of heating also has a limited long term effect on the environment because the carbon in biomass is part of the natural carbon cycle, while the carbon in fossil fuels is not.

Why is GSA Interested?

For facilities in remote locations, biomass boilers have the potential to provide mission assurance, because significant quantities of fuel can be stored/produced on site. Additionally, recent advances in biomass boiler operation and efficiency, coupled with reduced fuel cost resulting from state incentives for companies using beetle-killed trees for biofuel applications, have made this technology potentially cost-effective, while contributing to federal goals of energy security and carbon reduction, and supporting state policy objectives.

COST EFFECTIVENESS Given recent improvements in biomass boiler efficiency, in areas where biomass fuel is readily obtainable, incentives are available, and gas pipelines are not readily accessible, biomass fuels promise to be more cost effective than fuel oils, liquefied petroleum gas (LPG) or electric heat.

OPERATIONS & MAINTENANCE The biomass boiler technology being evaluated uses wood pellets, which are more standardized and denser than wood chips. Pelletized fuel reduces facility size and complexity, the size of on site storage requirements, and required operator skill relative to alternative biomass boiler technologies.

DEPLOYMENT POTENTIAL In addition to validating this technology's real-world performance, a key component of this assessment will be to develop guidance needed to prioritize its potential for deployment by GSA, should the technology's performance prove out.

Adapted from a report by the National Renewable Energy Laboratory. The Green Proving Ground program, in association with a federal laboratory, is subjecting the wood-pellet-fired biomass boiler to real-world measurement and verification in GSA buildings. Findings from that investigation will be available in late 2013 or early 2014.

GPG Green Proving Ground Program

The Green Proving Ground program leverages GSA's real estate portfolio to evaluate innovative sustainable building technologies. The program aims to drive innovation in environmental performance in federal buildings and help lead market transformation through deployment of new technologies.